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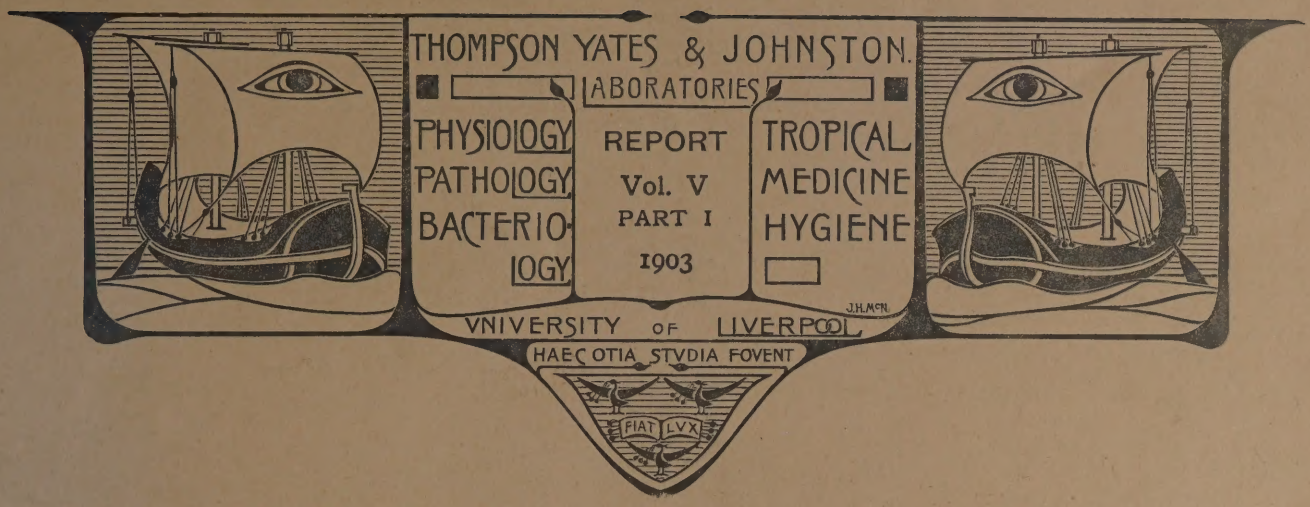
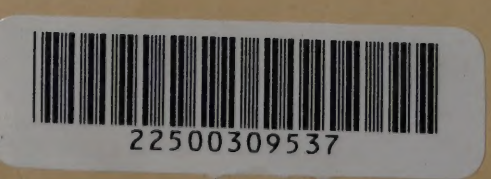


NEW SERIES

THE THICK-FILM PROCESS FOR THE DETECTION OF ORGANISMS IN THE BLOOD

BY
RONALD ROSS

AT THE UNIVERSITY PRESS OF LIVERPOOL. 1903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THE THICK-FILM PROCESS FOR THE DETECTION OF ORGANISMS IN THE BLOOD

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THE THICK-FILM PROCESS FOR THE DETECTION OF ORGANISMS IN THE BLOOD

By RONALD ROSS

IN the *Journal of State Medicine*, December, 1902, and the *Lancet*, January 10, 1903, I described a method which facilitates the detection of parasites of the blood by enabling us to examine thick films of dried blood in place of the thin films now generally used for the purpose. Instead of spreading a small quantity of blood over a large area and then fixing the haemoglobin and staining, the proposed method consists in taking a comparatively large quantity of blood, scarcely spread out at all over the slide, and stained without *fixing the haemoglobin*. In the first method one is often compelled to search many fields before finding a parasite: in the second method the parasites are much more crowded together owing to the thickness of the film of dried blood employed; and are just as visible as in the thin film owing to the fact that the haemoglobin, the opaque element of the blood, not being fixed, has been washed out during the process of staining with aqueous stains.

Photographs of a preparation of malarial blood made by this method were published in the *Journal of Tropical Medicine*, February 2, 1903; and Ruge has verified and amplified the process in the *Deutsche Med. Woch*, March 19, 1903, S. 205. Recently Bell and Laing advocate it for the detection of plague bacilli in blood (*Lancet*, June 20, 1903); and I am confident that it will be found useful for diagnosis in many affections besides malaria.

I now give a water-colour drawing of a field of a thick-film preparation of blood taken from an ordinary case of aestivo-autumnal infection. In a thick-film preparation of the same blood, less than one parasite on the average could be found in each field; whereas it will be seen that about eighty parasites can be counted in the field given in the plate. The photograph shows a field of a thick-film preparation of rat's blood containing *Trypanosoma brucei*. In a thin film of the same blood only one or two parasites could be found per field.

I am now using the following stock formulae for staining:—

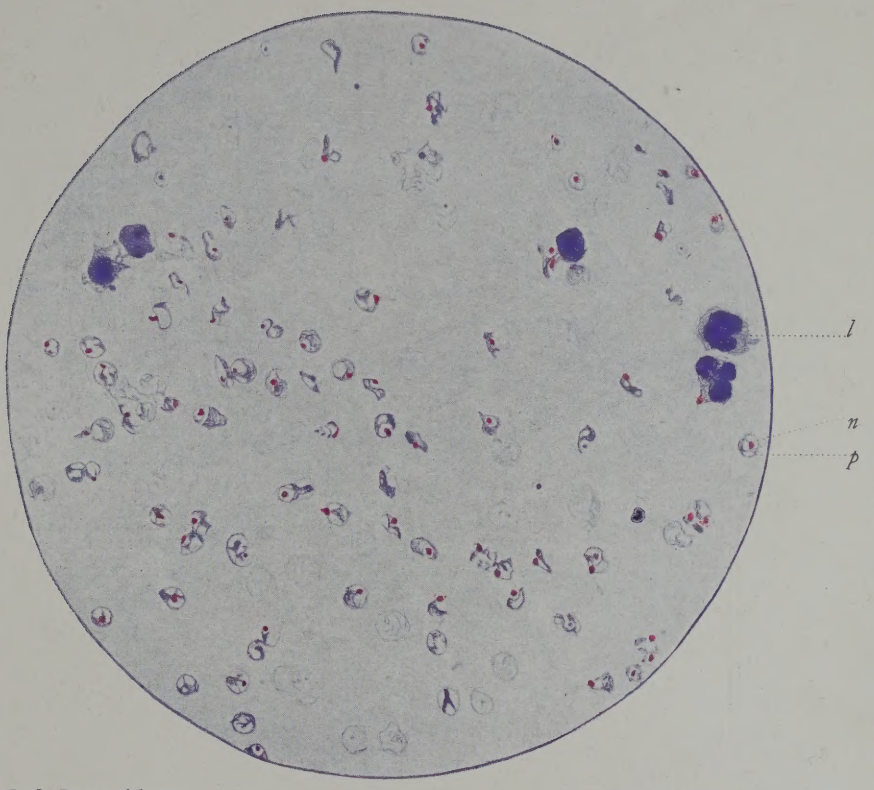
Eosine, 1 gramme	Medicinal Methylene Blue, 10 grammes
Water, 1,000 c.c.	Sodium Carbonate, 5 grammes
	Water, 1,000 c.c.

It is necessary to keep the blue solution for some days in a warm place until it has acquired the well-known purple tint. The thick film of blood on the slide is dried, and then very gently washed until all the colour has disappeared from it. A drop or two of the eosine solution is now placed upon it (without previous drying), and allowed to remain for a minute. Next, a drop or two of the blue solution is run in, and allowed to remain from fifteen to thirty seconds. Lastly, wash with a very gentle stream of water for a minute or so ; dry, and mount or examine.

The student must practice the method in order to obtain perfect results. He should aim at staining the parasites in a typical manner without staining the stromata of the red corpuscles. If the preparation is so much overstained that the stromata are deeply coloured, the preparation is not so elegant, though it may still be useful.

For crescents and other large pigmented malarial parasites, I use the weakest possible staining, sufficing just to give a faint tint to the organisms without obscuring their melanin. With trypanosomes the blue must be applied somewhat longer than for malaria parasites. It should be noted that for *Haemamoeba vivax* the method has not proved very satisfactory owing to the indecisive staining of the chromatin.

It is advisable to use a high ocular, say Nos. 4, 8, for finding the smallest organisms.



G. S. Boston, del. 1903 *Mag.* 750 *diam.*

Young Amoebulae of *H. praecox* in Thick Film
l, leucocytes. *p*, parasites. *n*, nucleus of parasites

Mag. 250 *diam.*

Trypanosoma brucei of rat in Thick Film